



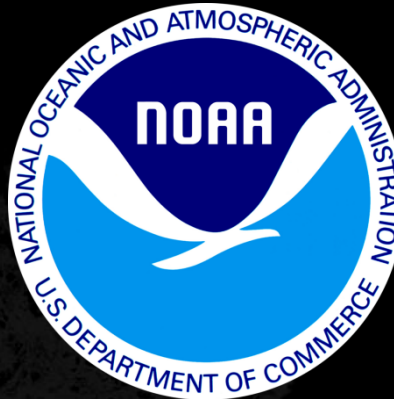
# National Weather Service Overview and Briefing on the Lakes Mead and Mohave Project

Todd Lericos  
Meteorologist-in-Charge  
NWS Las Vegas, NV





# The National Weather Service



## Mission Statement and Purpose

*The National Weather Service (NWS) **provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories,** adjacent waters and ocean areas, **for the protection of life and property and the enhancement of the national economy***

weather.gov NOT weather.com



@NWSVegas

weather.gov/lasvegas

Vegas Weather



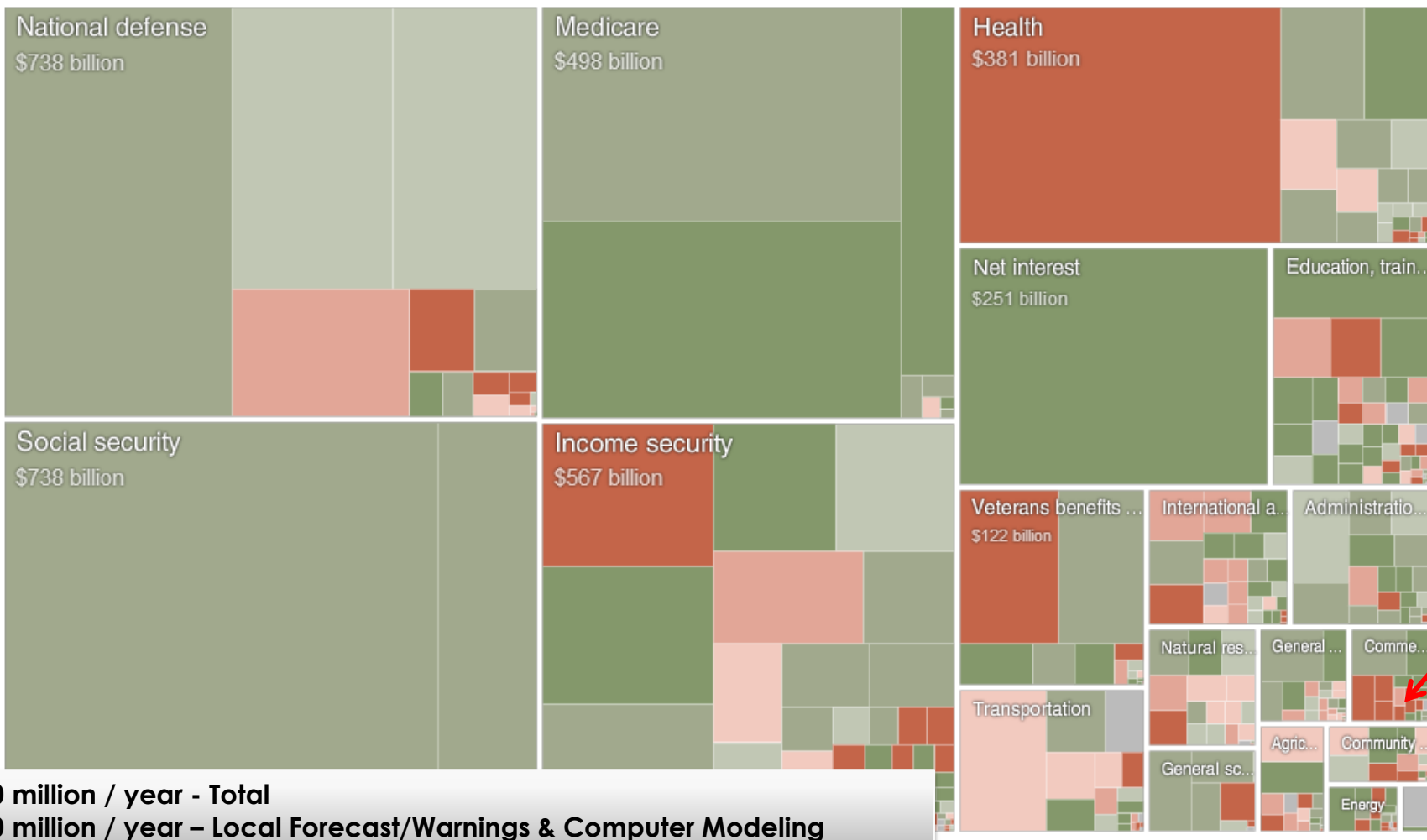


# NWS Budget

0.03 % of Total Budget

## 2011 Federal Budget

2011 Federal Budget Proposal  
\$3.69 trillion



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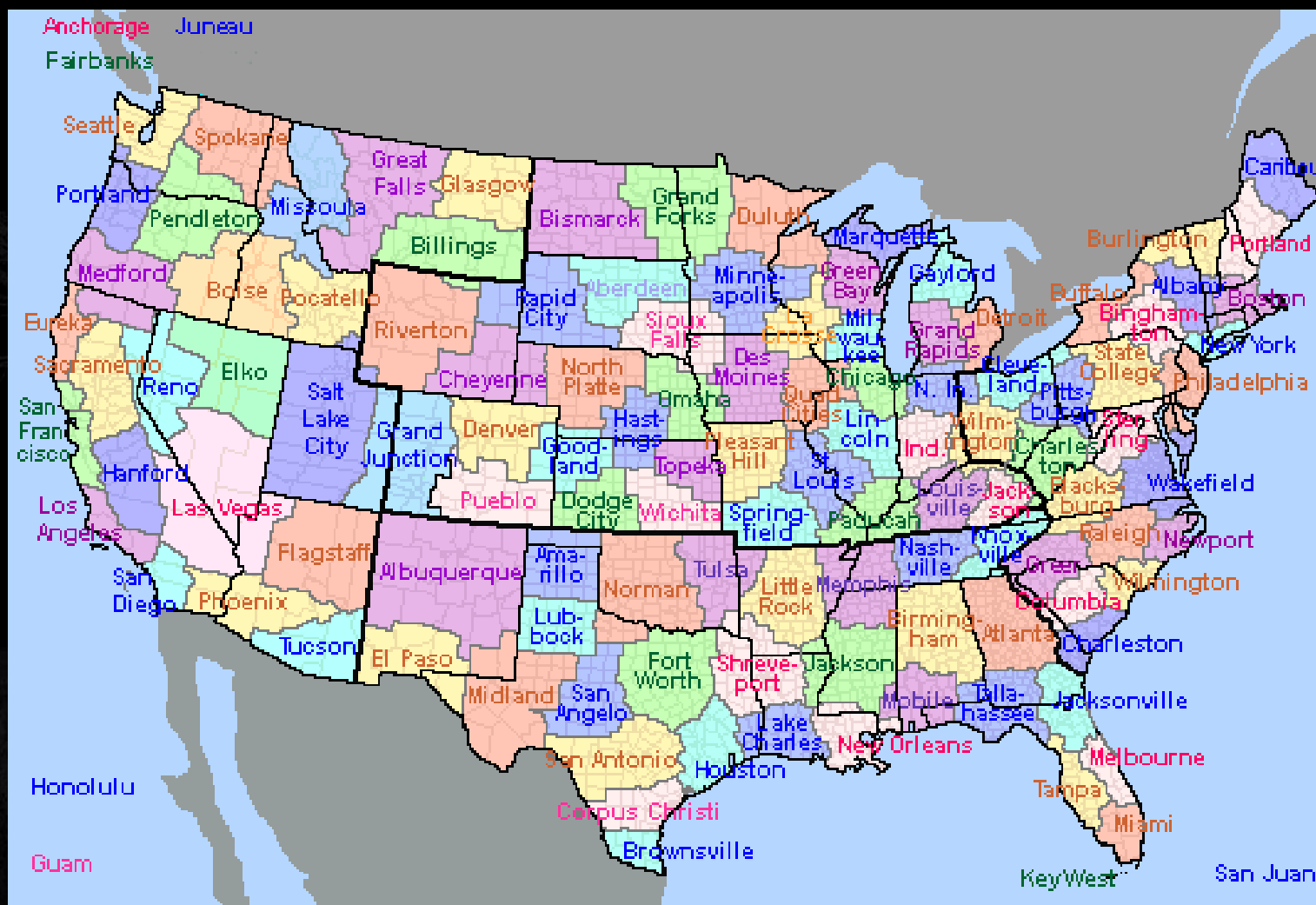
[weather.gov/lasvegas](http://weather.gov/lasvegas)

Vegas Weather





# 123 Local Forecast Offices



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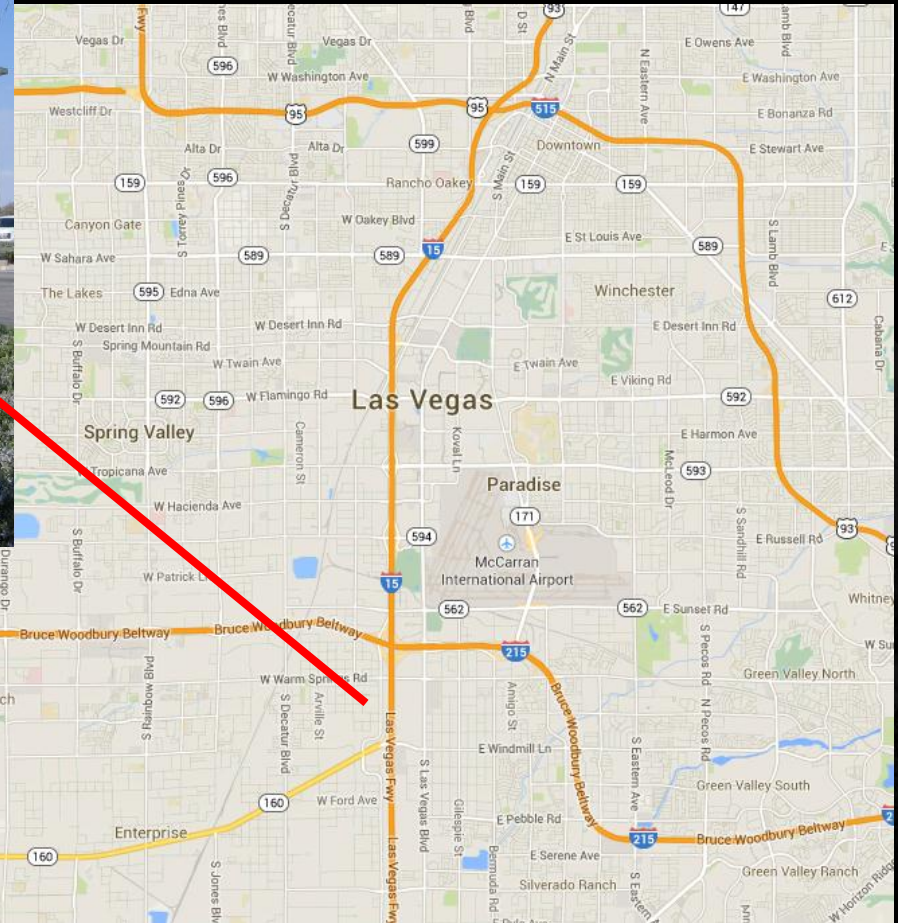
Vegas Weather







# Your Local NWS Forecast Office



7851 S Dean Martin Dr.  
Las Vegas, NV





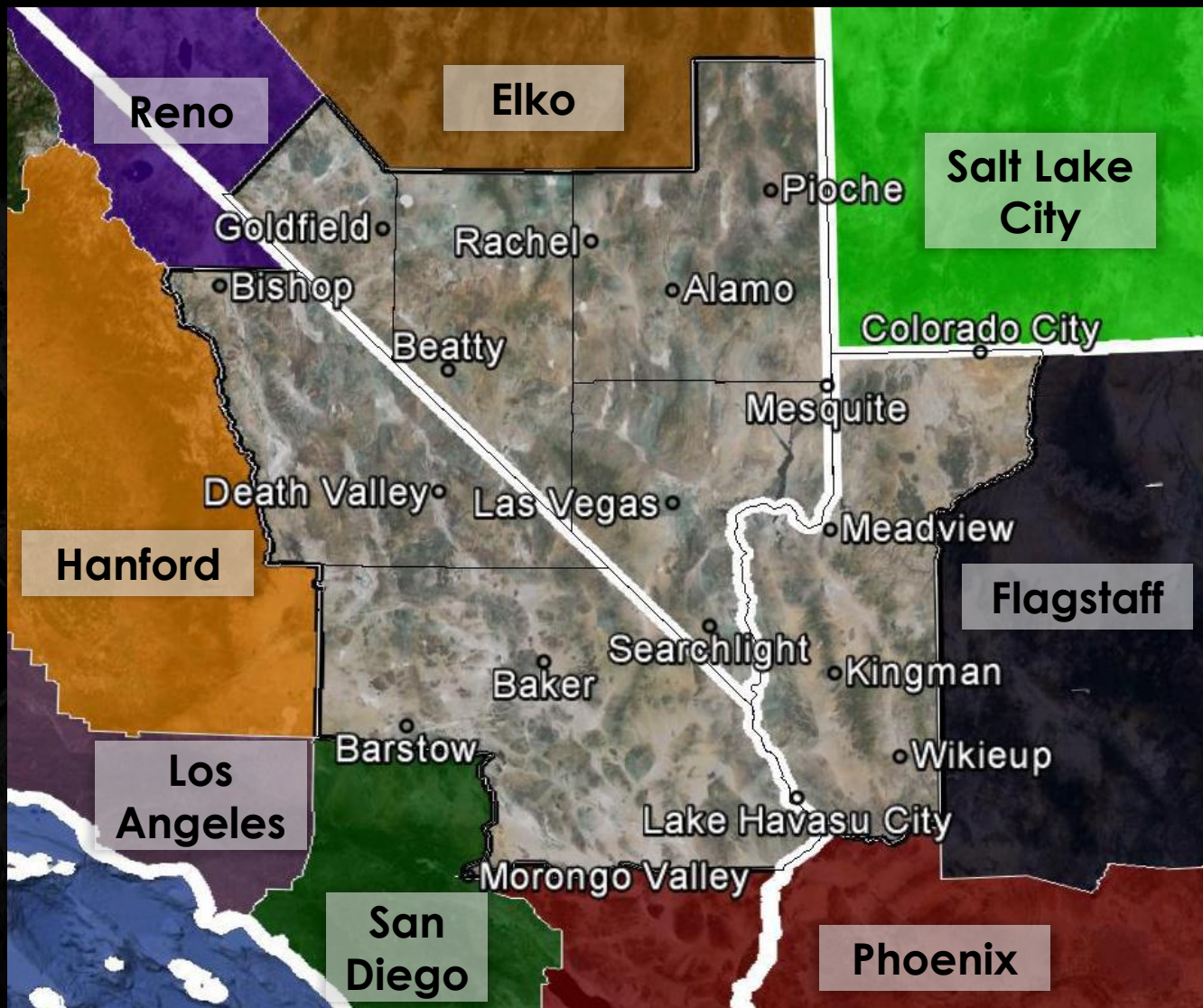
# Who we Serve

Here at NWS Las Vegas we serve the following counties\*:

**Arizona**  
Mohave

**California**  
Inyo  
\*San Bernardino

**Nevada**  
Clark  
Esmeralda  
Lincoln  
\*Nye



\* portions of these counties

Neighboring offices surrounding the region served by NWS Las Vegas



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# NWS Las Vegas – Operations



Meteorologists on site 24-hours a day



Up to 17 Meteorologists dedicated to public safety





# Products and Services

3-7  
Days

## OUTLOOK

An outlook is issued when a hazardous weather or hydrologic event is **possible** in the next week. Outlooks are intended to **raise awareness** of the potential for significant weather that could lead to situations that may threaten life or property.

## WATCH

A watch is used when the **risk of a hazardous weather or hydrologic event has increased significantly**, but its occurrence, location or timing is **still uncertain**. A watch means that hazardous weather is possible. People should **have a plan of action** in case a storm threatens and they should listen for later information and possible warnings especially when planning travel or outdoor activities.

## WARNING

A warning is issued when a hazardous weather or hydrologic event is **occurring, imminent or likely**. A warning means weather conditions pose a threat to life or property. People in the path of the storm need to **take protective action**.

## ADVISORY

An advisory is issued when a hazardous weather or hydrologic event is **occurring, imminent or likely**. Advisories are for **less serious conditions than warnings**, that cause significant inconvenience and if caution is not exercised, could lead to situations that may threaten life or property.

Possible

Imminent

Certainty of the Forecast

Time until the Event

Now



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# Why aren't we more visible

TV Radio  
Apps Private Companies  
Internet

121 Local Office  
issuing Warning

Support to Gov't (Fed, State, Local)  
Emergency Management

National Centers for Environmental Prediction  
Model Simulations  
Climate & Seasonal Outlooks  
Aviation & Marine Forecasts  
Storm & Tornado Prediction  
Hurricane Tracks

Observations  
Radar Network, Satellites, Weather Balloons,  
Ground-level observations at airports,  
Aircraft, Lightning Network, Data Buoys,  
Stream Gauge Network, 11,000 Volunteer  
daily-data collectors, Thousands of Volunteer  
storm spotters





# Lake Mead / Mohave Projects



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Vegas Weather







# How it started

- Need for safety and planning
- Willingness of NPS to allocate resources to develop a network of observation platforms
- Willingness of NWS to provide resources to provide marine weather forecast services



# How it started - Need

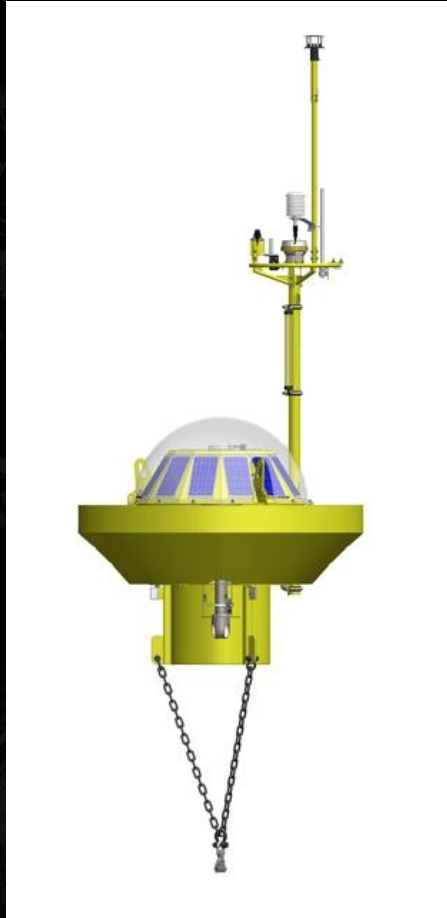
- Lake Mead Recreation Area ranks in Top 10 annually for NPS locations visited (6-7 million)
- Swimming and Boating account for 7-10 deaths a year on average since 2000
- No routine weather and water observation or forecasts are available
- Planning needs internally in Lake Mead NRA (park staff) as well as marinas and other agencies operating on the lakes







# NPS Observation Network



\$360k investment

Axys WaveWatch Buoys (x5)

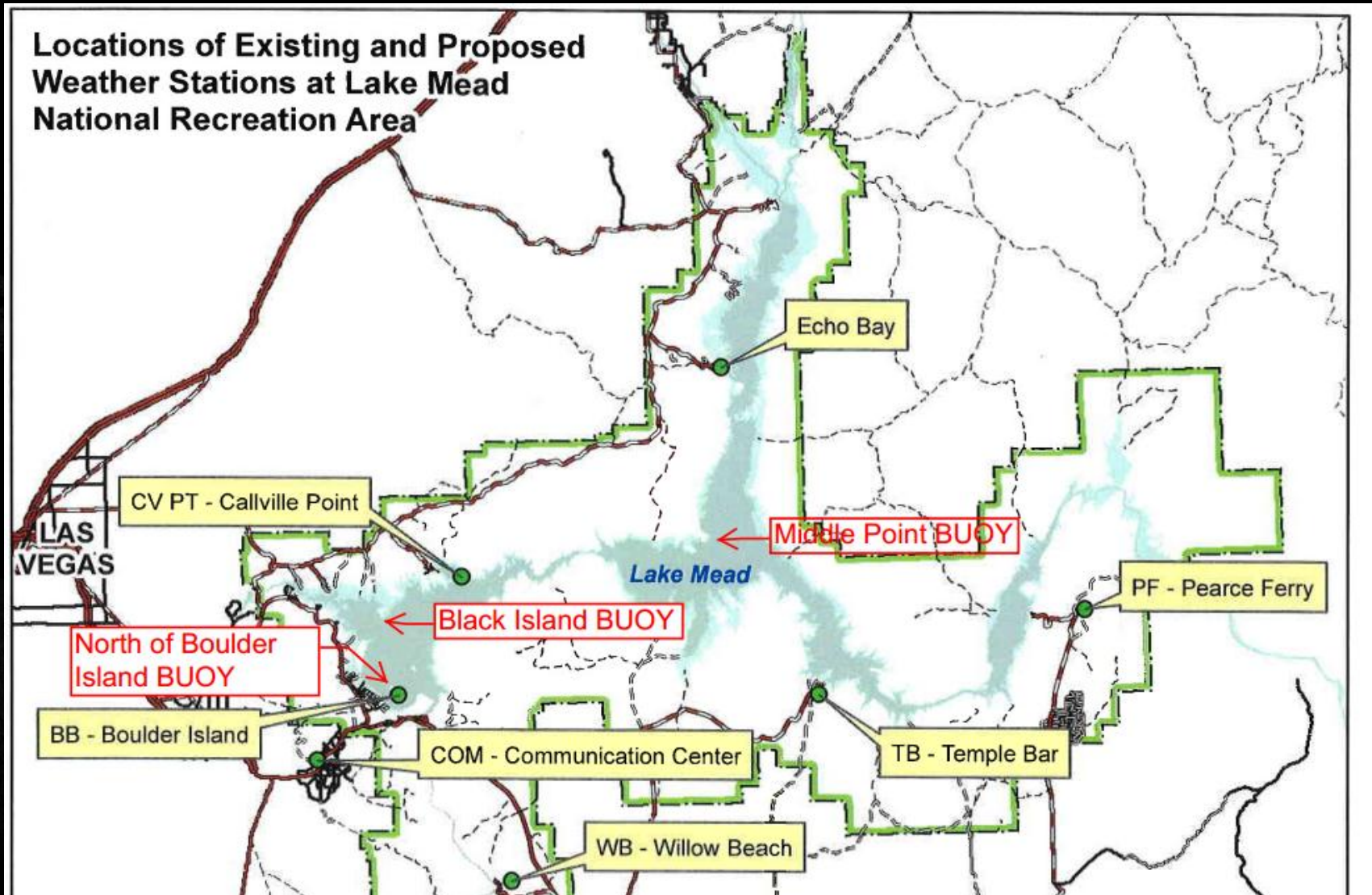
- Wind
- Temperature
- Relative Humidity
- Wave height / Direction
- Water Temperature
- Atmospheric Pressure

Campbell Scientific Weather Stations (x12)

- Wind
  - Temperature
  - Relative Humidity
  - Atmospheric Pressure
- All Satellite communication – Real Time



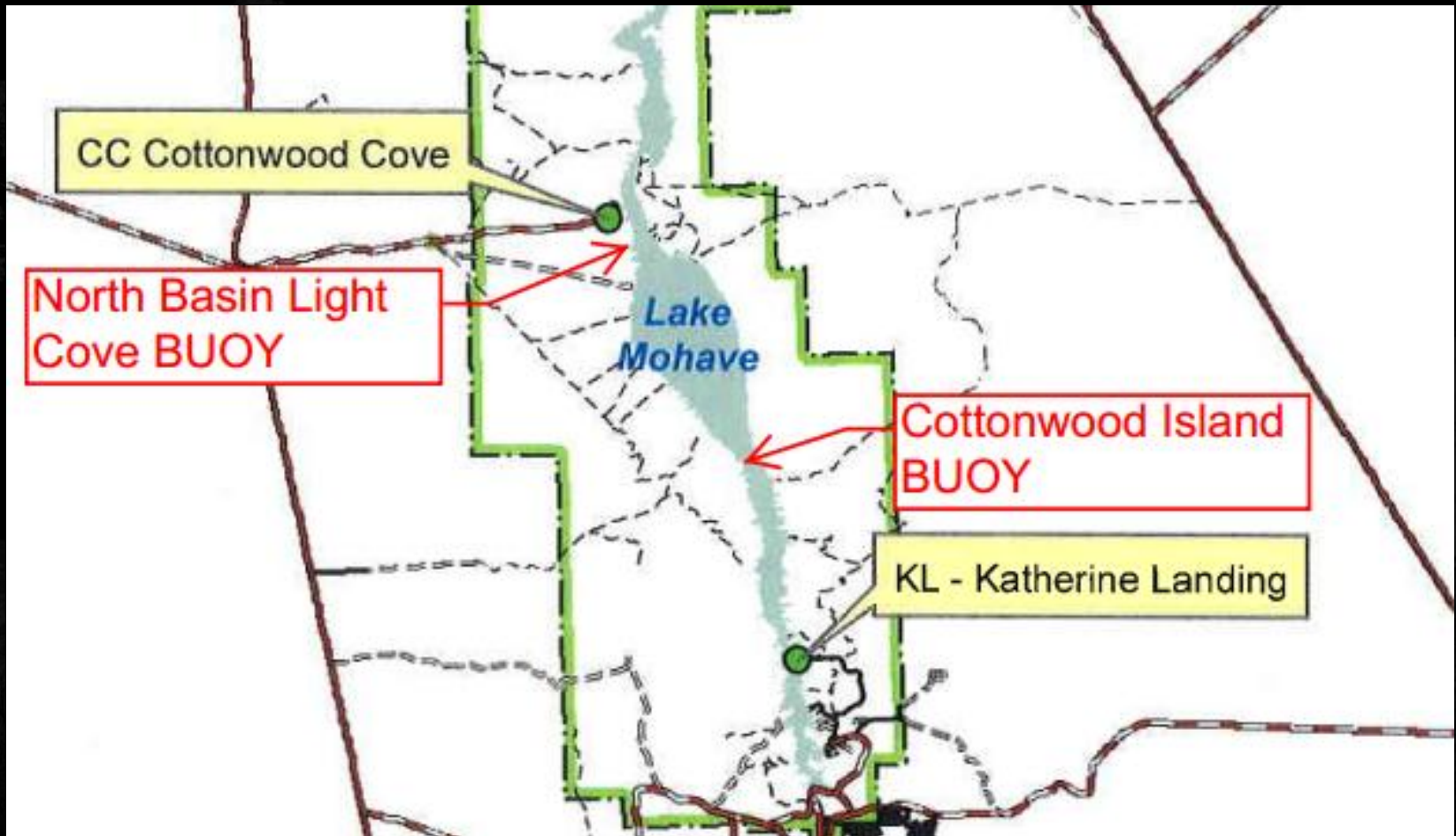
# Lake Mead - Surface and Buoy Locations







# Lake Mohave - Surface and Buoy Locations





# NWS Marine Weather Products – (Planned)

## Routine Marine Weather Forecasts

- Wave Heights
- Winds
- Temperatures (air and water)
- Expected weather conditions

## Small Craft Advisories

- Issued Lake Wide for expected conditions that will affect small boats and recreational craft

## Special Marine Warnings

- Issued for portions of the Lake when conditions are short-fused or rapidly changing like a thunderstorm

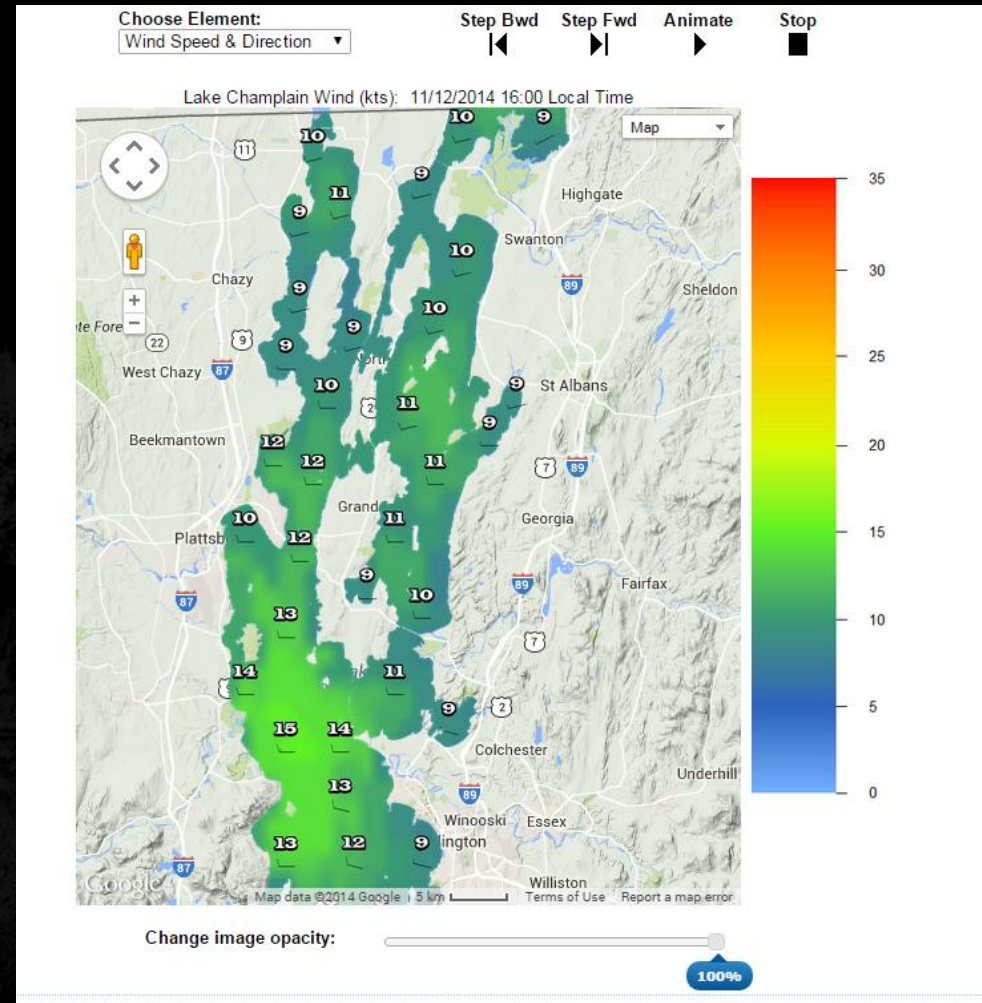




# Wave Height and Direction Forecasting

## SWAN Model

- SWAN (Simulating WAVes Nearshore) model is a spectral wave model developed at the Delft University of Technology, The Netherlands.
- Forecasts are produced for Wave Height and Direction
- Model is “driven” (input) by an atmospheric numerical model





# Modeling Hardware



**Four 4x AMD™ Opteron 6380, 2.5GHz - 64 CPU Cores**

**64GB Memory,(16x4GB)**

**PERC H700 Integrated RAID Controller, 512MB Cache**

**~\$10k**





# How visitors may use this info



## Many ways to serve the Public

- Kiosks for boaters at each Marina
- Boating Classes
- Visitor Center / Pamphlets at Gates
- Public Education
- Work with TV Weather People to mention on Newscasts



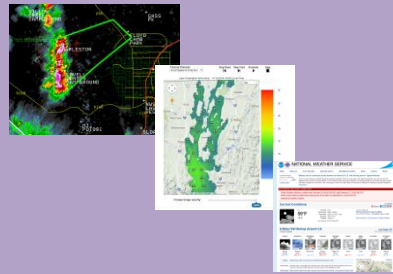
# Observations versus Forecasts

## Observations



## Forecast Products and Services

Watch, Warnings, Advisories  
Weather/Wave Conditions



## Verification and Calibration of Forecasts



## Customer Use

Real-Time observations for actions  
Forecast services for planning and preparation